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Please enter the accompanying "Substitute Specification" (for which both a "marked-up" and "clean" copies are provided) for the Specification of record, which has been prepared in conformance with the requirements of 37 C.F.R. §1.125, and includes a declaration by the undersigned attorney-of-record that no new matter has been knowingly entered via the Substitute Specification.

The "marked-up" copy of the Substitute Specification shows the amendments being entered compared to how the Specification was initially entered into the U.S. National Phase, pursuant to 35 U.S.C. §371, on September 19, 2002.

The Substitute Specification provides: (1) sectional headings for the various portions of Applicants' Specification in conformance with U.S. practice and attends to other formalities, as required by the Examiner in the first Office Action. Typographical and grammatical informalities noted during the preparation of the Substitute Specification have also been corrected.

In view of the foregoing, Applicants respectfully request that the Examiner enter the accompanying "Substitute Specification," pursuant to 37 C.F.R. §1.125, and withdraw the objection, as presented in the first Office Action, to the prior Specification of record.



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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: HARRY L. PLATT *ET AL.* ART UNIT: 3762

SERIAL NO.: 10/009,907

EXAMINER: F. P. OROPEZA

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TITLE: CYCLING EVENT AND AUTO-TRIGGER MEMORY HANDLING

**DECLARATION OF NO "NEW MATTER" IN SUPPORT OF
SUBSTITUTE SPECIFICATION, PURSUANT TO 37 C.F.R. §1.125**

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Dear Sir:

I, EDWIN D. SCHINDLER, am attorney-of-record for Applicants of the above-identified patent application and hereby affirm that I personally prepared the Substitute Specification for the instant patent application and, pursuant to 37 C.F.R. §1.125(b)(1),

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Edwin D. Schindler, Reg. No. 31,459

October 21, 2005

Date

state that I have not knowingly added any new matter to the application via the Substitute Specification, and that all of the amendments entered in the Substitute Specification are directed solely to matters of form and clarification of existing subject matter not affecting the scope of the invention.

I hereby declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this statement is directed.

A handwritten signature in dark ink, appearing to read "Edwin D. Schindler", written over a horizontal line.

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CYCLING EVENT AND AUTO-TRIGGER MEMORY HANDLING

BACKGROUND OF THE INVENTION

Technical Field of the Invention

The present invention relates to the field of monitoring a cardiac patient's electrical cardiac activity by means of a cardiac event recorder and, in particular, to the memory handling of such cardiac event recorders.

Description of the Prior Art

Cardiac event recorders currently known to the prior art generally have only one type of memory used for both manual and auto-triggered ECG recordings. Signal artifacts and noise can inadvertently cause a false triggering of the auto-trigger with such prior art devices and, thus, fill the memory with useless information.

It would be advantageous to provide a method and apparatus which prevents the memory of cardiac event recorders from being filled with useless information resulting from a false triggering of the auto-trigger.

SUMMARY OF THE INVENTION

It is, therefore, an object of the present invention to provide a method and apparatus for the recording of an ECG which substantially overcomes or ameliorates the above-mentioned disadvantages by preventing memory overflow.

According to one aspect of the present invention, there is disclosed a method of recording into memory of a cardiac event recorder, said method including the steps of subdividing the memory into two parts with the two parts being a manual trigger memory and an auto-trigger memory. Further, partitioning the auto-trigger memory into a plurality of auto-trigger recording partitions, whereby in the event of a manual trigger, acquired signals are recorded continuously in said manual trigger memory and in the event of an auto-trigger, acquired signals are recorded continuously in said manual trigger memory and then copied into one of said plurality of auto-trigger recording partitions

Preferably, the recording is done in cycling mode whereby the signal is continuously recorded in the manual memory, thus providing a segment of pre-event recording prior to the manual trigger, which records information for a predetermined length of time.

Preferably, if the recording is initiated by the auto-trigger, the cycling mode is not terminated or interrupted.

Preferably, at least two manual trigger recordings are able to be stored in the manual memory.

Preferably, the manual trigger recordings are about 2 to 3 times longer than the auto-trigger recordings.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

The present invention will now be described with reference to the accompanying

drawing in which:

Fig. 1 is a diagram showing the memory of the cardiac event recorder.

DETAILED DESCRIPTION OF THE DRAWING FIGURES AND PREFERRED EMBODIMENTS

When recording an ECG using a cardiac event recorder (not illustrated), the data is recorded into RAM 10, which is generally recorded cyclically, *i.e.*, when the memory is full, the data overflows and records over the previously recorded data.

The RAM 10 is subdivided into two parts, *i.e.*, a manual trigger memory 11 and an auto-trigger memory 12. The auto-trigger memory 12 is further partitioned into a number of auto-trigger memory recordings 13.

In this cyclic recording mode, the data is continuously recorded into the manual trigger memory 12 and, thus, when a manual trigger is received, this fact is recorded. The data recorded after a manual trigger is then stored in the manual trigger memory 11 with at least two manual triggered recordings being stored in the manual memory. In this cyclic memory mode, a segment of pre-event recording is also stored in the manual memory 11.

If an auto-trigger function initiated the trigger, the cycling mode is not terminated or interrupted (unlike the manual trigger.) After the duration of the auto-triggered event, which is recorded in the manual memory 11, it is copied into one of the partitions 13 of the auto-trigger memory 12.

The foregoing describes only one embodiment of the present invention, and modifications obvious to those skilled in the art can be made thereto without departing from the scope of the present invention.